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interesting papers will appear during the year. Trusting that the aid and sympathy of our friends may be relied upon for the new year and thanking you for past favors, we conclude the Old and begin the New.

BOOKS.

Exercices D'Arithmetique. Enonces et Solutions. Par J. Fitz-Patrick, Ancien Professeur de Mathematiques et Georges Chevrel, Directeur de L' Institution Charlemagne, a Tours. With a preface by M. Jules Tannery, Assistant Instructor at the High Normal School. Large 8vo, paper cover, 484 pages, Price, 10 francs. Paris: A. Hermann.

It is believed that there has never before been a work written of the nature of the one under consideration. The publisher in a letter to us says that he thinks there has never before been a work of this nature published either in Europe or America. The table of contents is as follows: Preface; Chapter I., Preliminary Definitions.—Numeration: Chapter II., Addition and Subtraction; Chapter III., Multiplication; Chapter IV., Division; Chapter V., Divisibility of Numbers: Chapter VI., Common Divisor of Whole Numbers: Chapter VII., Prime Numbers: Chapter VIII., Fractions: Chapter IX., Decimal Fractions and Decimal Numbers; Chapter X., Ratios and Proportions; Chapter XI., Different Systems of Numeration; Chapter XII., Squares and Square Roots; Chapter XIII., Cubes and Cube Roots; Chapter XIV., Progression; Chapter XV., Miscellaneous Questions; Chapter XVI., Elementary Notions on the Theory of Numbers; Note by M. Matrot.

Each problem is completely solved.

To give our readers a better idea of the nature of this interesting work, we will translate a few of the questions.

Question 1.—*To investigate the change a number experiences, when we write one or more zeros between its digits.*

The authors first consider the case where one zero is written between the digits and take as an example, the number 6237. For this they write 62037, and show that $62037 = 9 \times 6200 + 6237$. Next they take 6204 and for it, write 620004. This is equal to $99 \times 6200 + 6204$. They next take the case where zeros are written between several digits of a number. As an example, they take 36356 for which 306300506 is substituted. This is shown to be equal to $9 \times 36350 + 99 \times 363000 + 9 \times 30000000$.

Question 285.—*A number divisible by 4 is always the difference of the squares of two whole numbers.*

Represent by $4N$ any multiple whatever of 4.

$$\begin{aligned} \text{We have } 4N = 2N + 2N &= 2N + N^2 + 1 - N^2 - 1 + 2N \\ &= 2N + N^2 + 1 - (N^2 - 2N + 1) \\ &= (N+1)^2 - (N-1)^2. \end{aligned}$$

Question 403.—*Demonstrate that if $\varphi(n)$ is a multiple of $(n-1)$, the number n is prime.*

Question 421.—*If a and b are two prime numbers, the expression $a^{b-1} + b^{a-1} - 1$ is divisible by ab.*

Question 432.—*If the number $2p+1$ is prime, the sum $(1.2.3.4....p)^2+(-1)^p$ is divisible by $2p+1$.*

These questions are sufficient to indicate the value of this fascinating work. It will be especially interesting to that class of Mathematicians who are fond of studying the curious combinations and properties of numbers. Under the Miscellaneous Questions are discussed, triangular numbers, quadrangular numbers, pentagonal numbers, etc. We take pleasure in recommending this work to all who are fond of this kind of Mathematical investigation. B. F. F.

The Elementary Properties of the Elliptic Functions with Examples. By Alfred Cardew Dixon, M. A., Late Fellow of Trinity College, Cambridge; Professor of Mathematics at Queen's College, Galway. 8vo cloth, 142 pp. Price, $1.25. New York: Macmillan and Co.

The object of this work is to supply the wants of those students who, for reasons connected with examinations or otherwise. wish to have a knowledge of the elements of Elliptic Functions, not including the Theory of Transformations and the Theta Functions. *Preface.*

This little book gives a very full treatment of Elliptic Functions and is worthy a careful reading. B. F. F.

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